SERVICE MANUAL

Castle®

5520
5525
5530

WARMING CABINETS

MDT Diagnostic Company

1777 E. Henrietta Road
P.O. Box 23077
Rochester, New York 14692

Technology for Life

30926 Rev. C

SERVICE MANUAL 30926 (1/18/84)
Rev. A (11/ 9/85) GRAPHICS REVISED: Pages 5, 21, 22, & 25
Rev. B (3/21/86) GENERAL REVISION
Rev. C (11/18/87) Changed Logos: Front & Back Covers & p. ii

For Complete Manual Add:
Installation Instructions 30971 Rev. C
Operators Manual 30923 Rev. B
Parts Catalog 30927 Rev. C

DESCRIPTION OF SYMBOLS & NOTES IN MANUAL

The following symbols with related notes appear in this manual.

"Danger" notes apply when there is a possibility of serious injury or death.

"Warning" notes alert the user to the possibility of personal injury.

"Caution" notes alert the user to the possibility of damage to the equipment.

"Notes" alert the user to pertinent facts and conditions.

All parts replaced under warranty shall be returned intact to the Castle, Rochester, N.Y., for evaluation.

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—IMPORTANT—

SPECIAL SAFETY INSTRUCTIONS

CAREFULLY READ THE FOLLOWING INSTRUCTIONS BEFORE SERVICING THE UNIT, AND FOLLOW THE INSTRUCTIONS.

STORAGE INSTRUCTIONS (p. 5)

Do not store items in the Warming Cabinet which could introduce flammable agents into the cabinet atmosphere. This unit contains electrical components designed to heat and circulate air within the cabinet. Contact with an airborne flammable agent may cause explosion or fire, resulting in serious personal injury, or damage to equipment and surroundings.

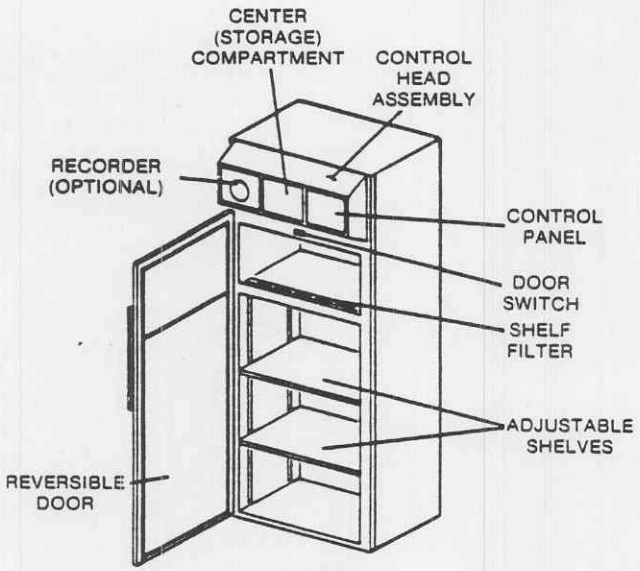
TEMPERATURE SELECTION (p. 4)

Hot substances, heated to temperatures above 49°C (120°F), may cause burn damage to skin tissue. Goods, solutions, etc., which may contact skin tissue when used, should not be processed at temperatures above 49°C (120°F).

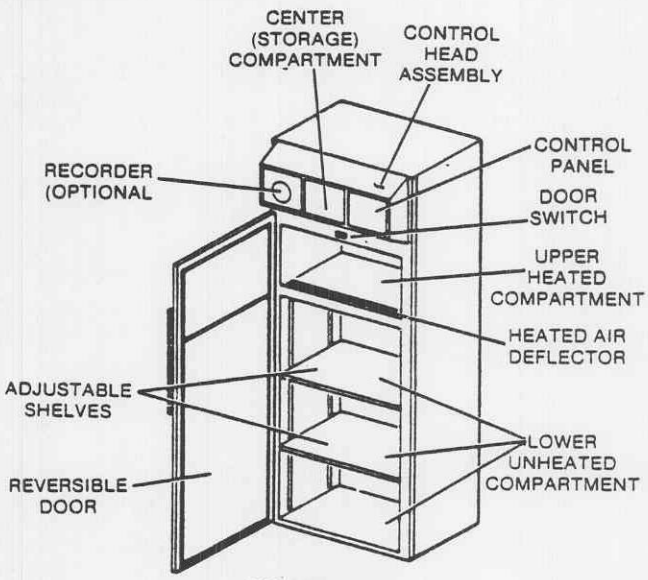
STORAGE INSTRUCTIONS (p. 5)

When Warming Cabinet is at operating temperatures above 49°C (120°F), contact with interior surfaces of heated compartments could result in burns to skin. Avoid contact with interior cabinet surfaces when removing or replenishing stock if cabinet temperature is above 49°C (120°F).

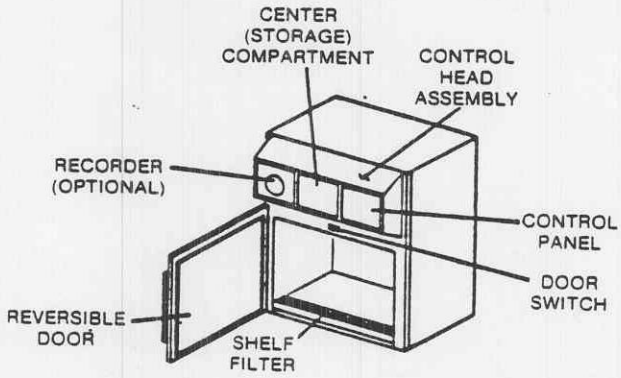
5520, 5525, & 5530 WARMING CABINETS



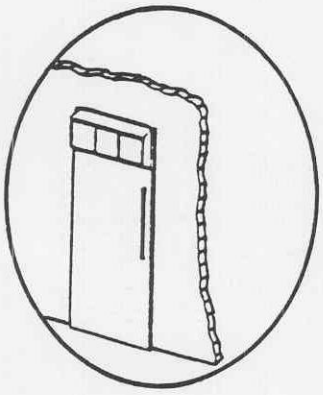
MODEL 5520
(CABINET MODEL)



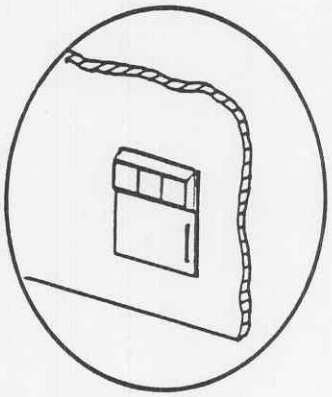
MODEL 5525
(CABINET MODEL)



MODEL 5530
(CABINET MODEL)



MODELS 5520 & 5525
(RECESSED MODEL)



MODEL 5530
(RECESSED MODEL)

GENERAL

Castle 5520, 5525, and 5530 Warming Cabinets are designed for the heating and storage of dry goods (e.g. blankets, towels, etc.) and solutions.

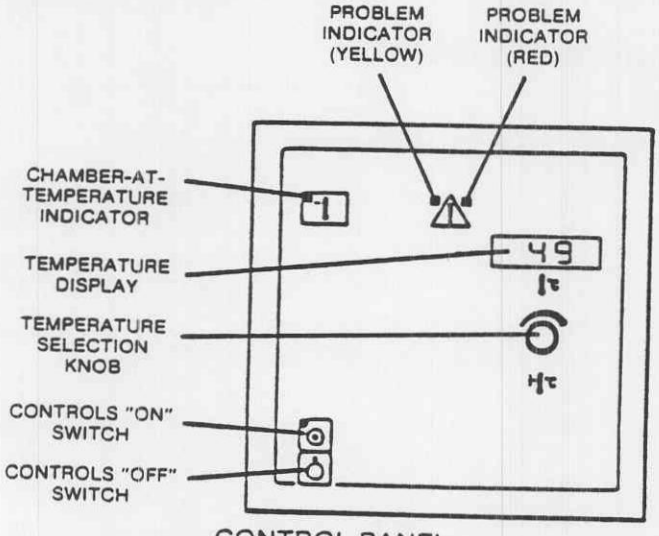
The 5520 Warming Cabinet circulates heated air evenly over items stored on each of its four shelves. Cabinet temperature is adjustable from 36°C (97°F) to 71°C (160°F). Each shelf is capable of holding 20 two-litre square flasks containing solutions, or combinations of flasks and dry goods, or dry goods only. A filter provided in the top shelf, filters the heated air circulating upward from the lower shelves. The height of the three lower shelves is adjustable.

The 5525 Warming Cabinet has an upper heated compartment and a lower unheated compartment with shelves. Adjustable temperature range for the heated compartment is identical to the 5520 Warming Cabinet described above. Overall shelf capacities and lower shelf adjustability are also the same. Air will not circulate from the lower compartment to the upper compartment.

The 5530 Warming Cabinet is compactly sized to provide one storage compartment capable of holding 20 two-litre square flasks containing solutions, or a combination of flasks and dry goods, or dry goods only. A filter provided in the front of the compartment filters the heated air circulating upward from below.

Either unit may be equipped with an optional recorder for the purpose of providing a 24 hour record of operating temperatures.

DESCRIPTION
Control Panel



CONTROL PANEL

CONTROLS "ON" SWITCH - Activates the Control Panel (Turns the Warming Cabinet on.). A green indicator light will appear at the upper left-hand corner of the switch, when the switch is activated.

CONTROLS "OFF" SWITCH - Deactivates the Control Panel (Turns the Warming Cabinet off.). If the unit is equipped with an optional recorder, the recorder will continue to operate, providing a 24 hour record of temperatures.

TEMPERATURE SELECTION KNOB - Turning the Temperature Selection Knob, while holding it in the depressed position, will allow the operator to select the desired operating temperature to be maintained. The available temperatures that can be selected range from 36°C (97°F) to 71°C (160°F). Temperature selection will appear, in degrees centigrade, on the digital Temperature Display as long as the knob is depressed.

TEMPERATURE DISPLAY - Continuously displays, in degrees centigrade (Range: 0°C to 85°C), the actual temperature within the Warming Cabinet, as long as the Control Panel is activated. When the Temperature Selection Knob is depressed, the actual temperature display will disappear and the set temperature (temperature selected by the operator) will appear, accompanied by an asterisk (*). The actual temperature will reappear when the Temperature Selection Knob is released.

CHAMBER-AT-TEMPERATURE INDICATOR - Lights as long as the interior temperature remains within 5.5°C (10°F) of the set temperature. The color of the indicator light, located in the upper left-hand corner of the indicator, is green.

PROBLEM INDICATOR: YELLOW - Lights to indicate a malfunction in the Warming Cabinet circuitry. The yellow light will be accompanied by an audible alarm and a "OO" that will appear in the Temperature Display.

PROBLEM INDICATOR: RED - Lights to indicate EITHER the temperature of the Warming Cabinet has risen above the set temperature by 8.3°C (15°F) and an 'overheat' condition exists, OR there is a malfunction in the Warming Cabinet circuitry. A red light for an 'overheat' condition is accompanied by an audible alarm (The Temperature Display will show the cabinet temperature.). A red light for a circuitry malfunction is accompanied by an audible alarm and an "OF" that will appear in the Temperature Display.

Center (Storage) Compartment - Control Head Assembly

This compartment may be used for ready-access storage of recorder charts, ink pen cartridges, etc.

Door Switch

Closing the Warming Cabinet door will depress this switch and allow electrical power to be supplied to the heating circuit. When the door is opened, this switch will be released and electrical power to the heating circuit will be shut off.

Reversible Door

A Warming Cabinet door swings open either to the left or right, depending on the individual unit. If desired, a door may be converted so it swings open in the opposite direction. Instructions for reversing the door swing are in this Service Manual, and should only be undertaken by Castle Service personnel.

Shelf Filter (Models 5520 & 5530 Only)

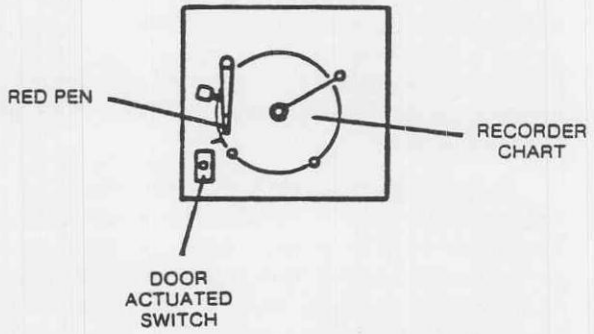
Filters the upward flow of heated air into a compartment.

Adjustable Shelves (Models 5520 & 5525 Only)

The two middle shelves may be raised or lowered, as desired, to increase or decrease the height of the three lower compartments.

Optional Recorder

A Warming Cabinet may be equipped with an optional Recorder for the purpose of providing a 24 hour record of operating temperatures. It will continue to record temperatures even though the Control Panel has been deactivated by pressing the Controls "OFF" Switch.



OPTIONAL RECORDER

RECORDER CHART - Graduated to record cabinet temperature in degrees centigrade (20°C to 100°C), over a 24 hour period.

PEN - Records temperature in red ink.

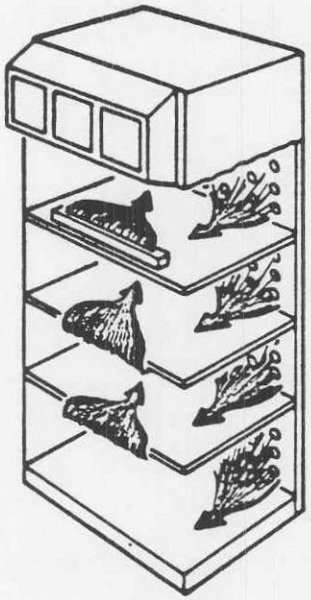
DOOR ACTUATED SWITCH - Turns recorder on when the door is closed. Turns recorder off when the recorder door is opened. May be pulled out to turn recorder on while the recorder door is open.

Pen arm will automatically lift off of the chart and move to the holding ramp when the recorder door is opened.

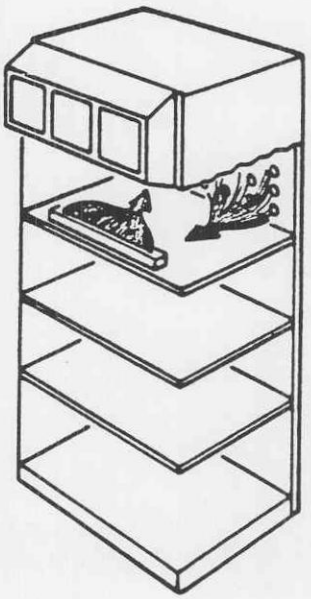
TEMPERATURE CONVERSION CHART

°C = °F	°C = °F	°C = °F
36 97	48 118	60 140
37 99	49 120	61 142
38 100	50 122	62 144
39 102	51 124	63 145
40 104	52 126	64 147
41 106	53 127	65 149
42 108	54 130	66 151
43 109	55 131	67 153
44 111	56 133	68 154
45 113	57 135	69 156
46 115	58 136	70 158
47 117	59 138	71 160

Heated Air Flow

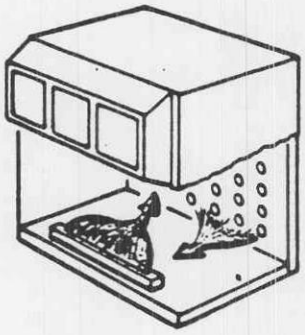


MODEL 5520

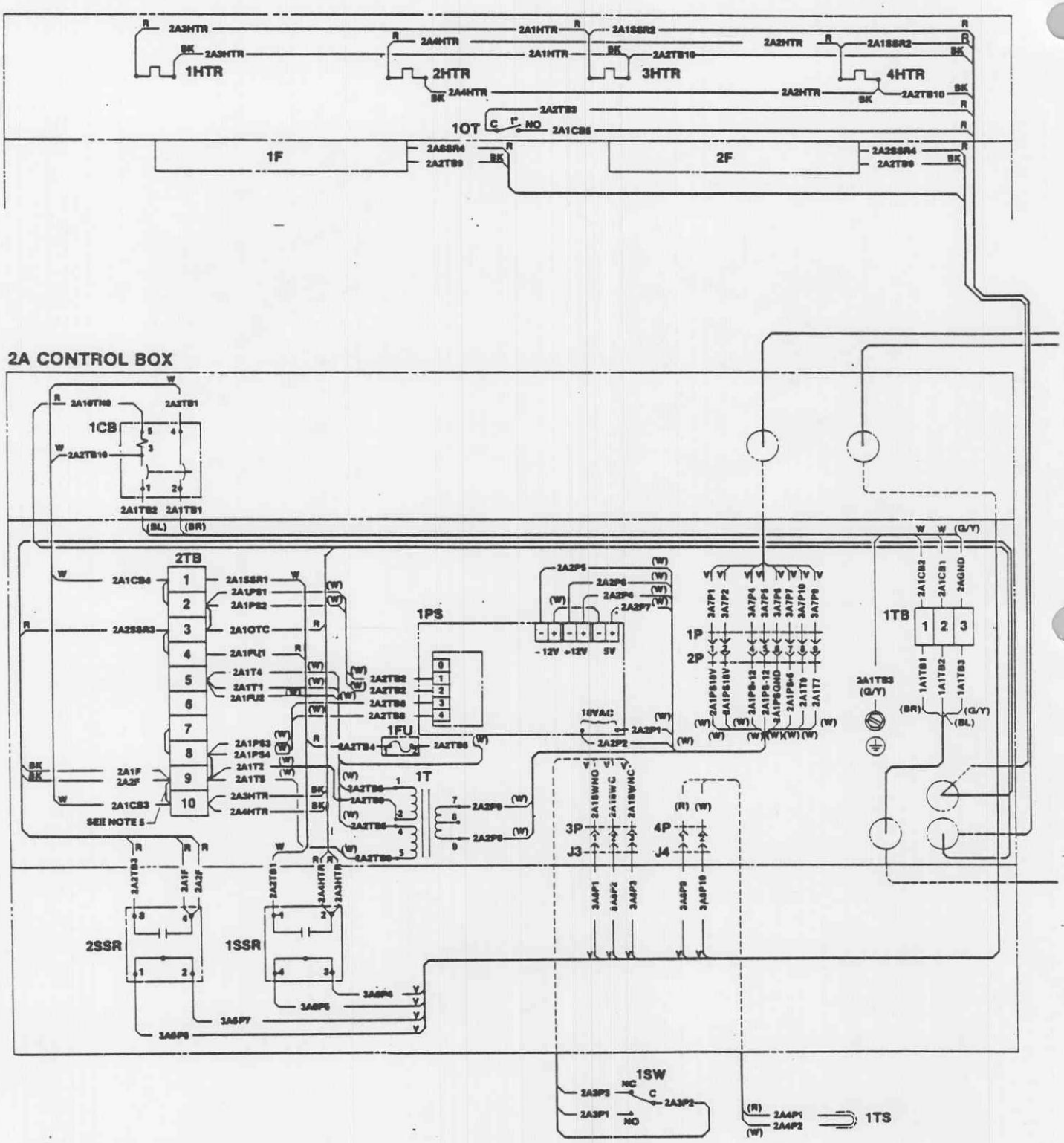


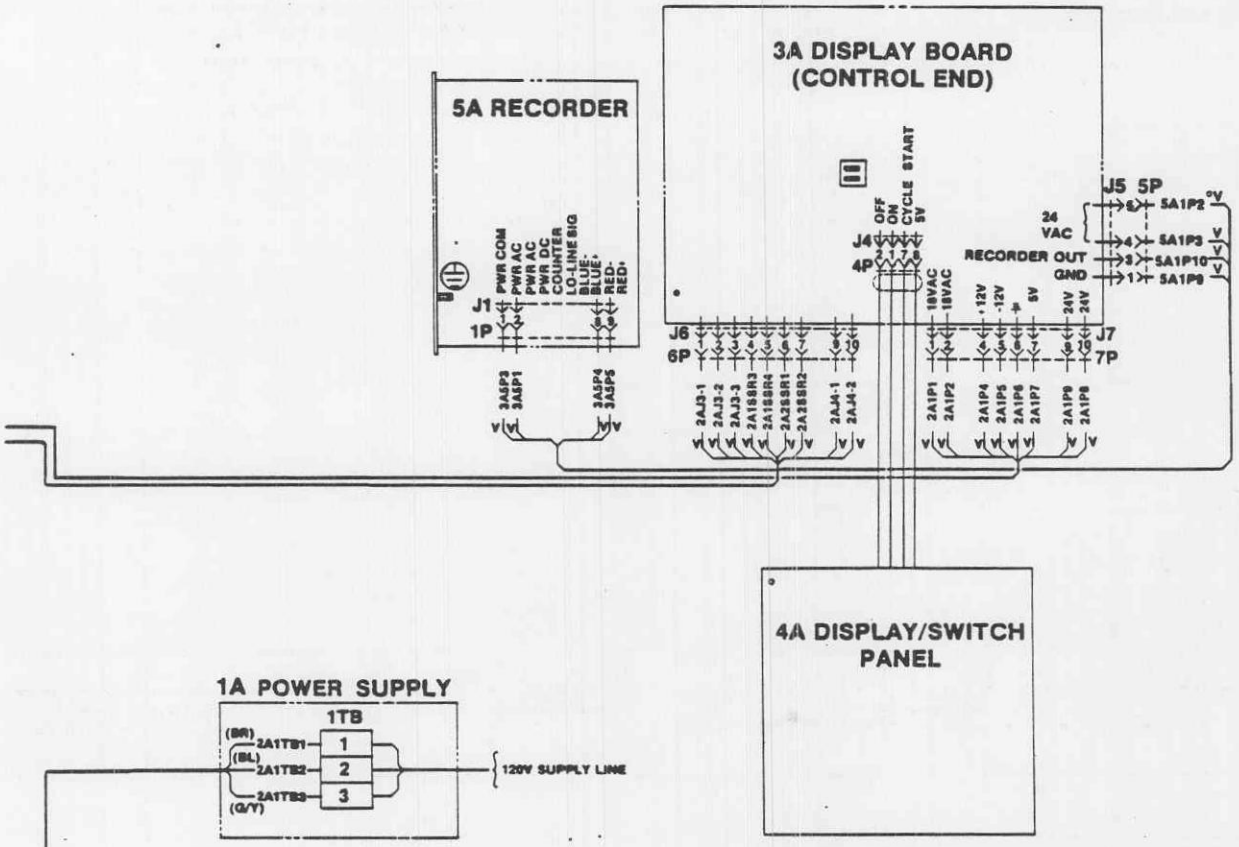
MODEL 5525

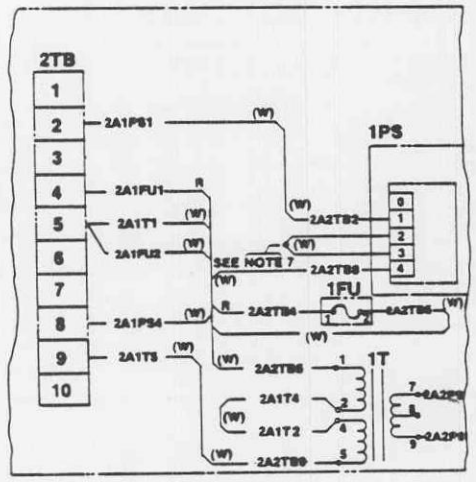
- Upper Heated Compartment
- Lower Unheated Compartment



MODEL 5530


2A CONTROL BOX
1HTR
2HTR
3HTR
4HTR
1OT
1F
2F
1CB
2TB
1PS
1FU
1T
1P
2P
1TB
3P
4P
J3
J4
2SSR
1SSR
1SW
1TS
SEE NOTE 5

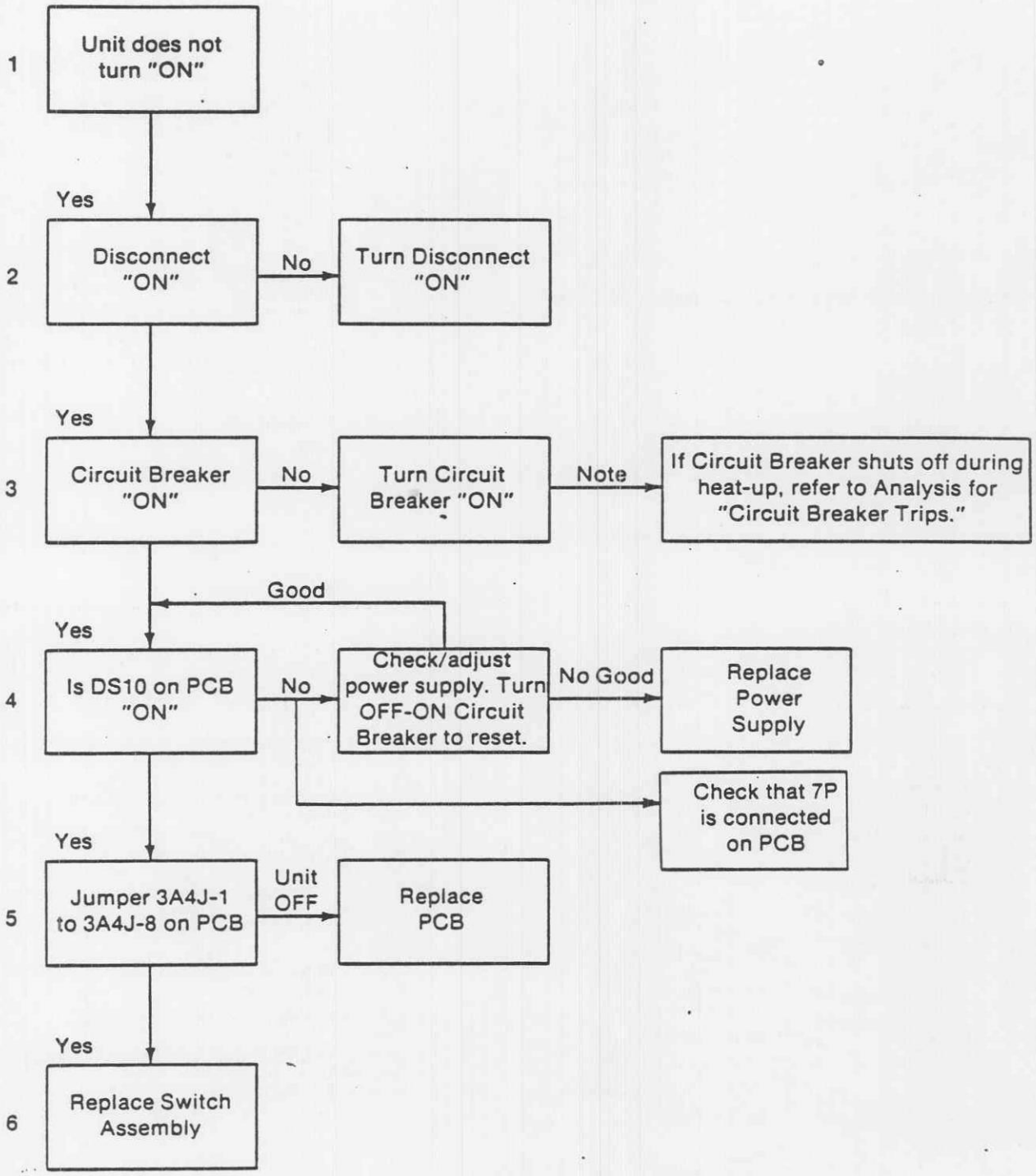




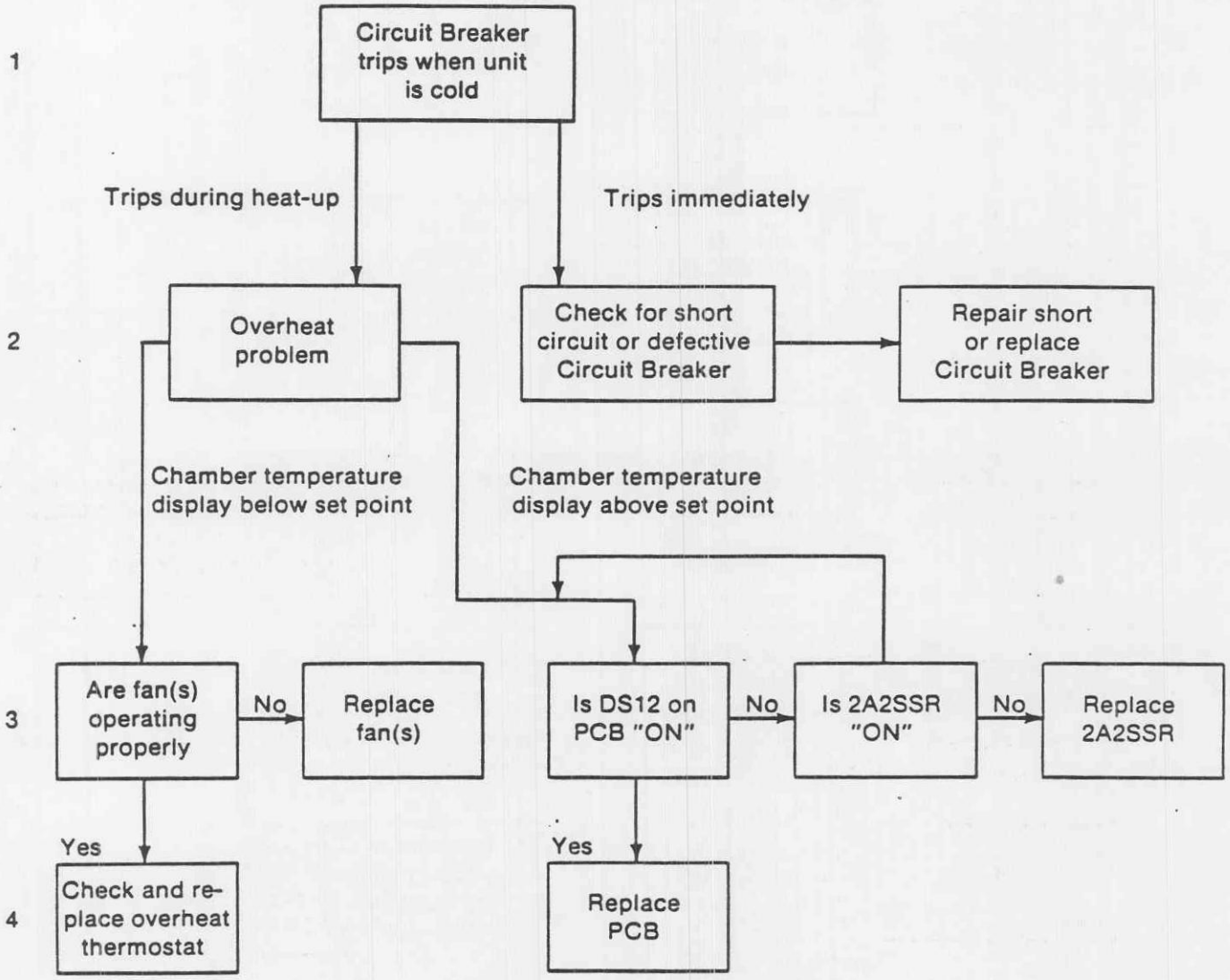
DETAIL: A
WIRING DIAGRAM FOR 240VAC

NOTE: 1) ALPHA NUMERICS SHOWN ON WIRE LEADS PART OF HOT STAMPING.
2) BRACKETS ( ) INDICATE ACTUAL WIRE COLOR, NOT INFORMATION TO BE STAMPED ON WIRE INSULATION.
3) THE WIRES WILL BE STAMPED WITH THE APPLICABLE COLORED STAMP AS FOLLOWS.
120V= R RED MARKING ON WHITE WIRE.
NEUTRAL= BK BLACK MARKING ON WHITE WIRE.
LOW VOLTAGE= V VIOLET MARKING ON WHITE WIRE.
4) INFORMATION AS NOTED ON LABEL ON BOTTOM SIDE OF ITB.
5) JUMPER STRIPS FURNISHED WITH TERMINAL BLOCK.
6) 120 VOLT WIRING SHOWN, FOR 240 VOLT WIRING SEE DETAIL: A.
7) CONNECT WIRES 1PS2 & 1PS3 TOGETHER.

Unit will not turn on.

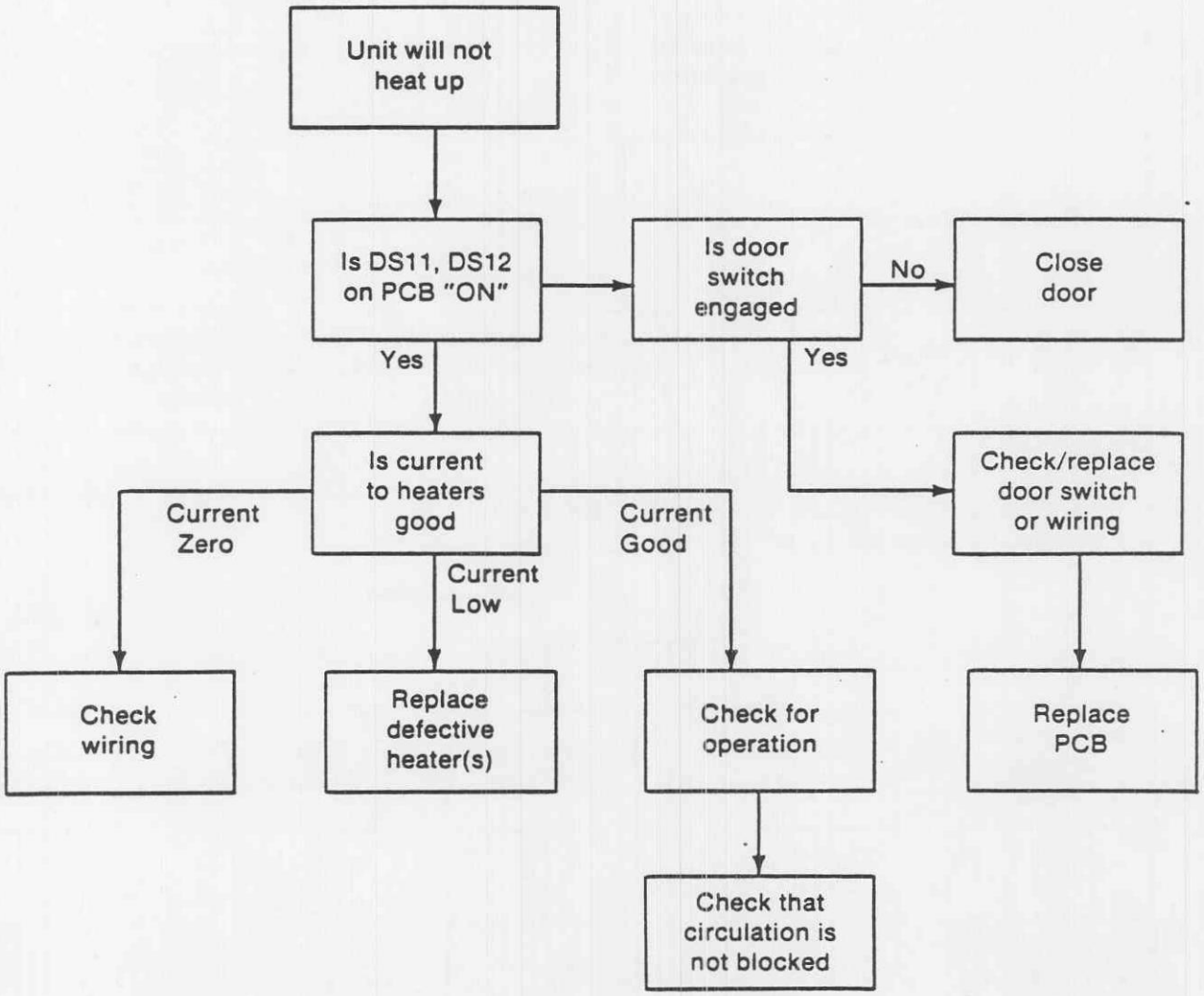


Circuit breaker trips.



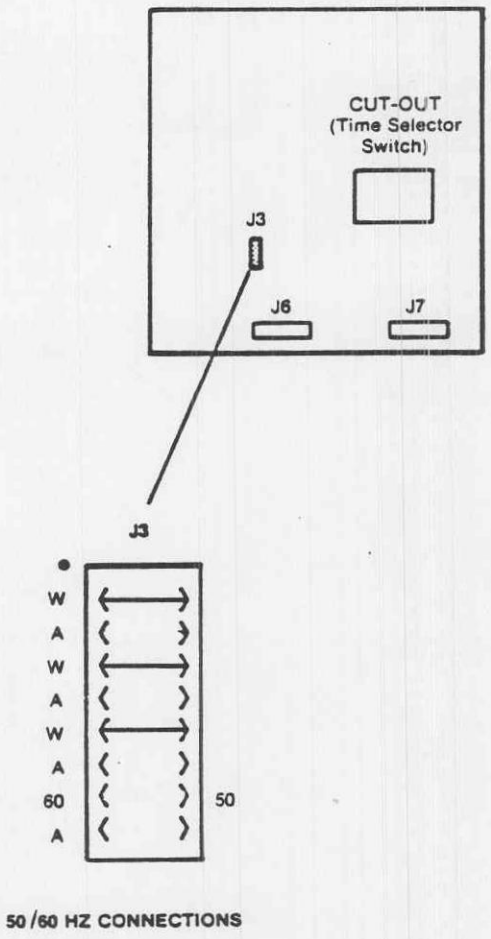
Unit will not heat up.

NOTE: When block diagram leads to trouble, refer to component checks that follow in this section of manual.



Jumper Connections on J3 of Printed Circuit Board

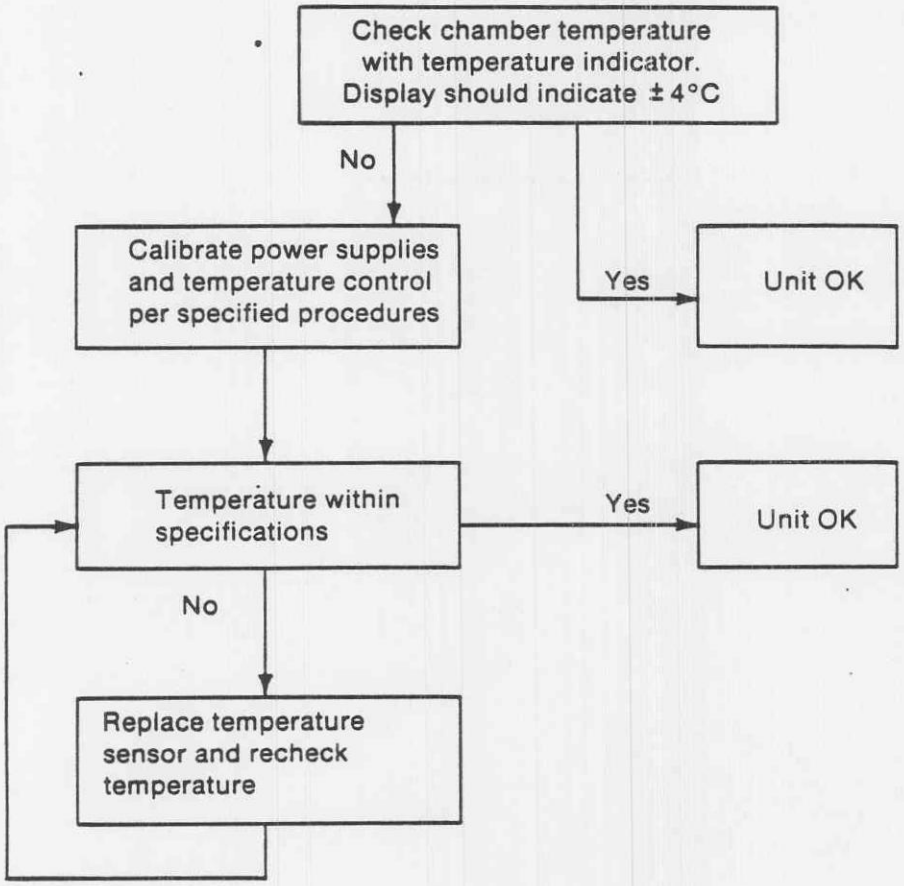
Jumpers on J3 of the printed circuit board must be properly connected for proper operation of a 50 Hz or 60 Hz supply circuit. Proper connections are as follows:



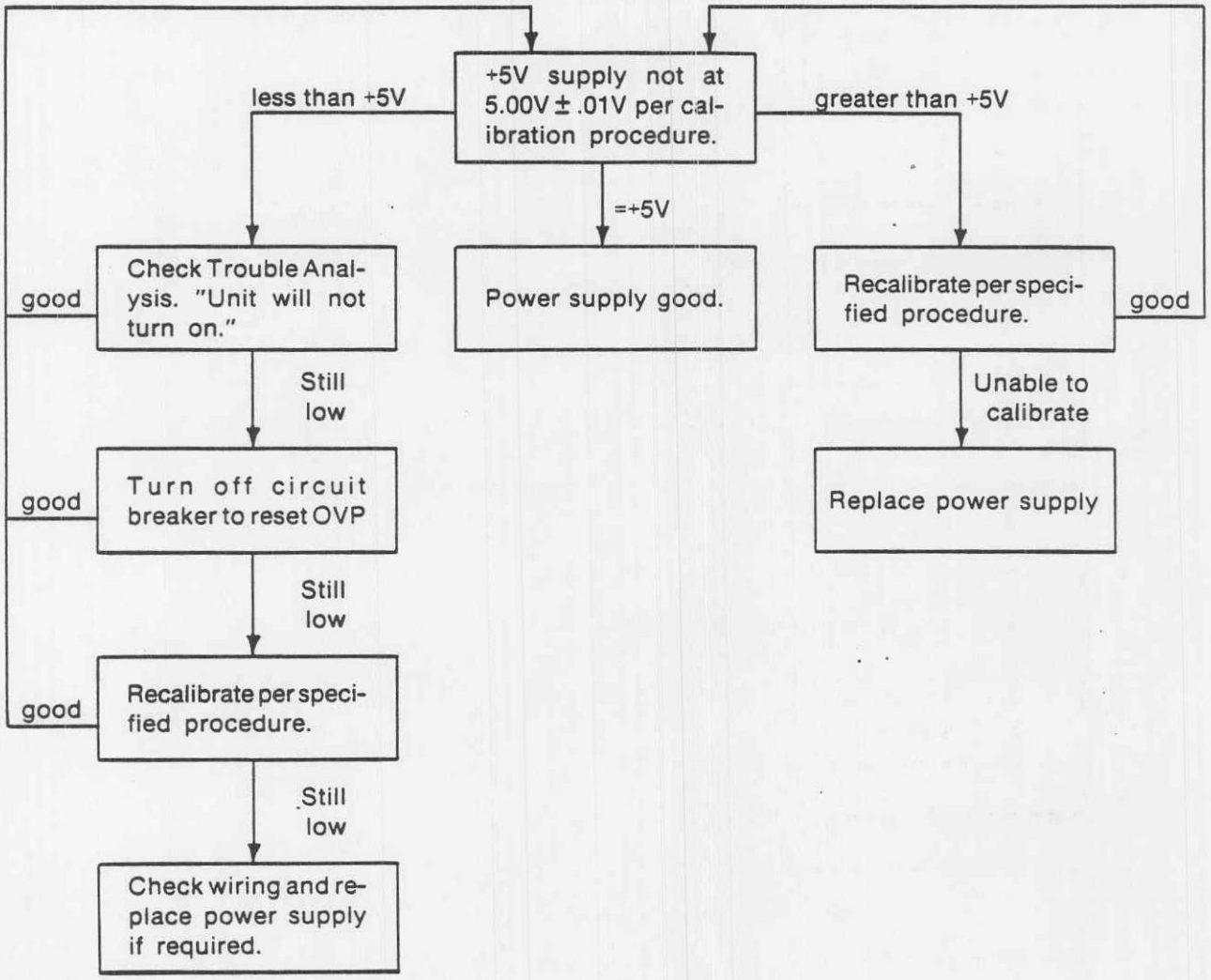
50/60 HZ CONNECTIONS

JUMPER

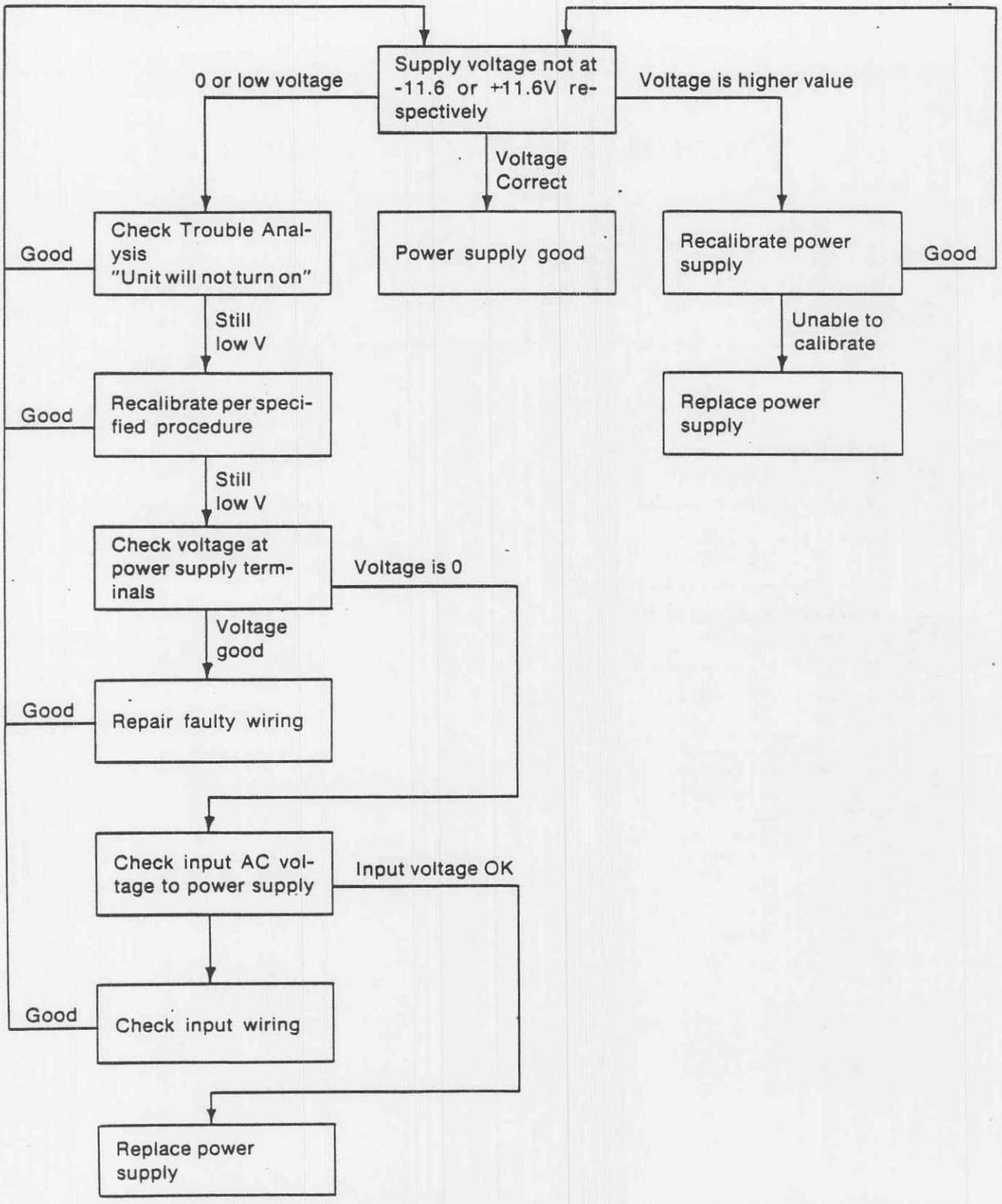
Unit not at Proper Temperature



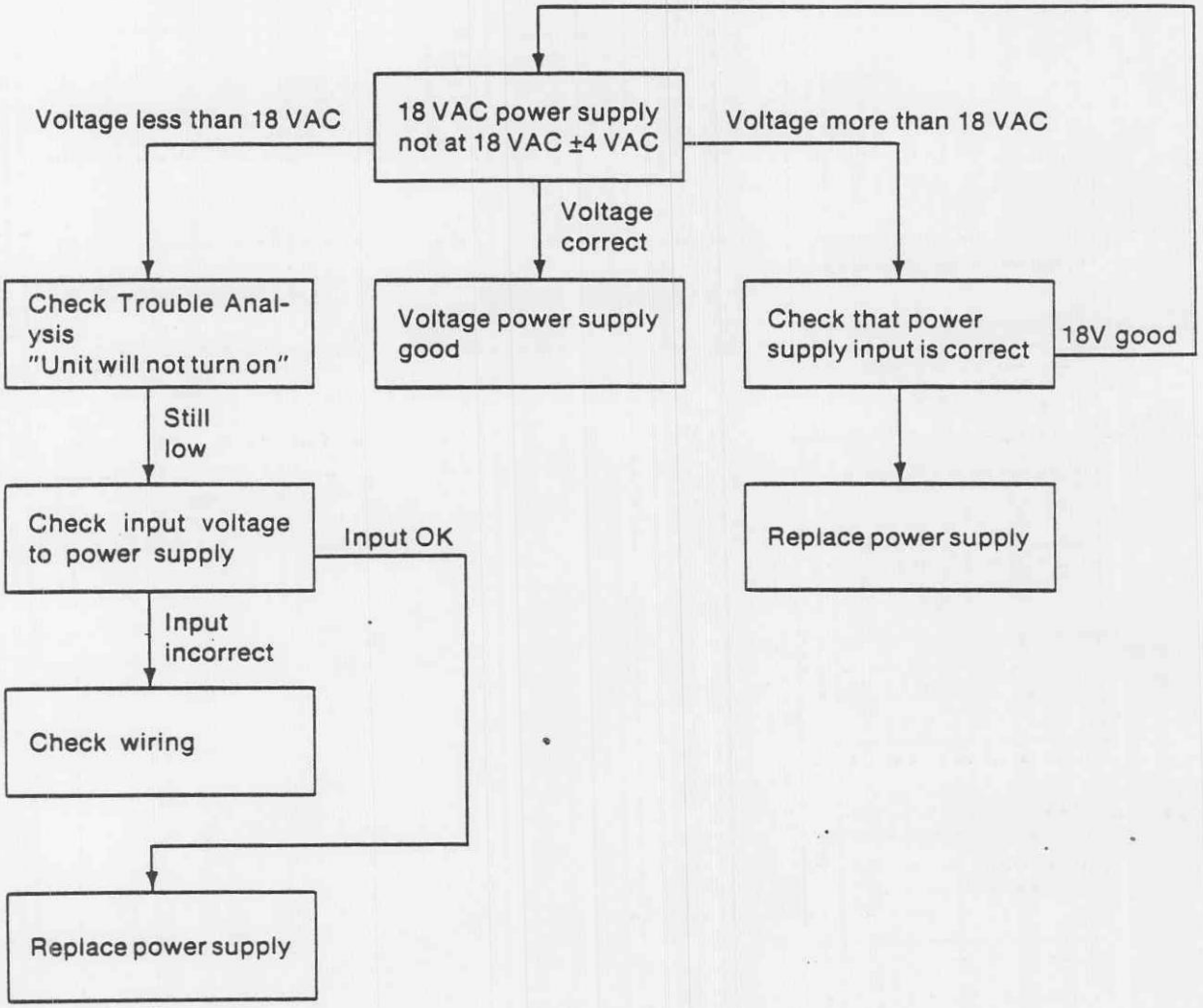
+5V Power Supply a Problem



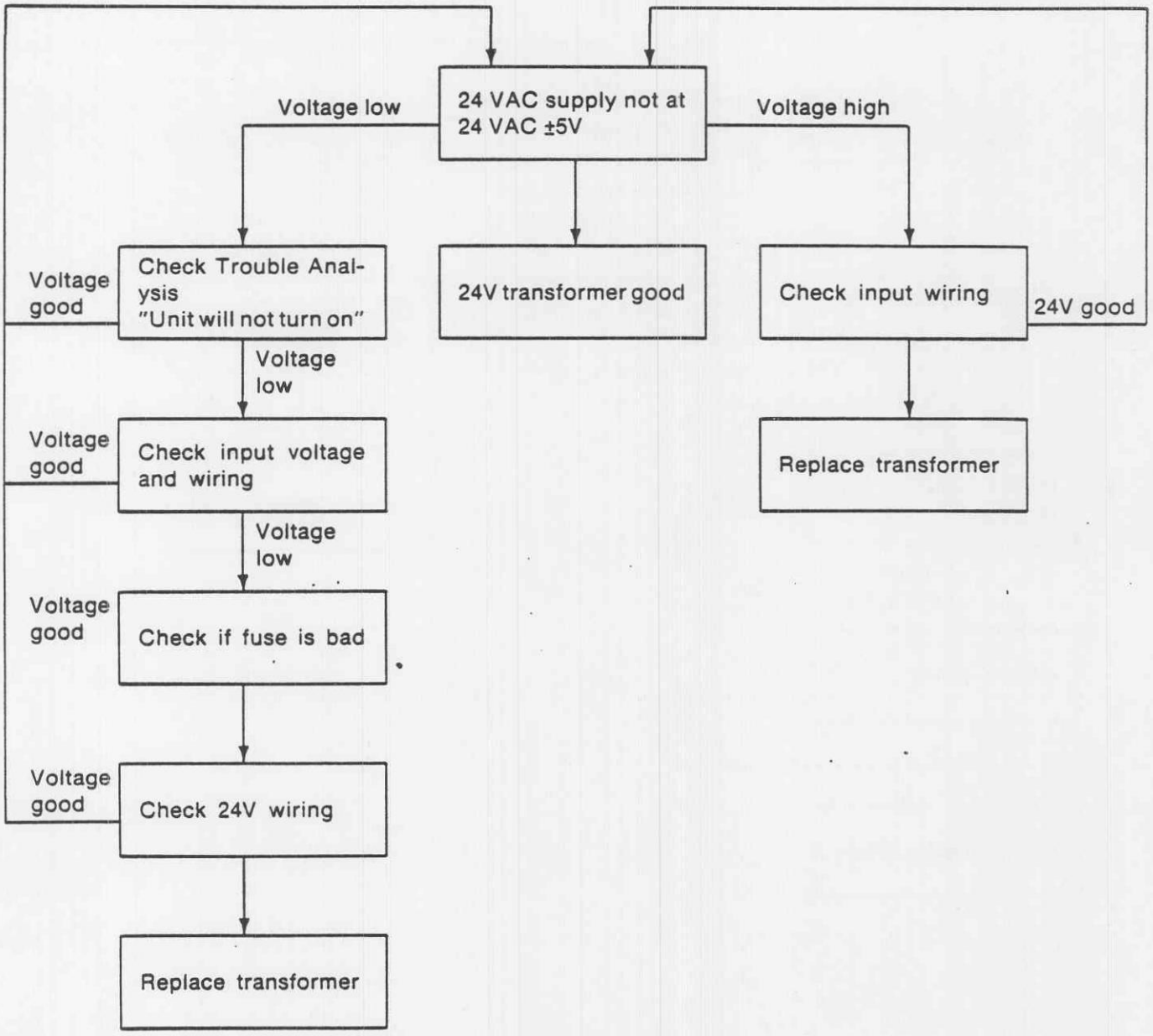
+11.6 or -11.6 Power Supply Problem



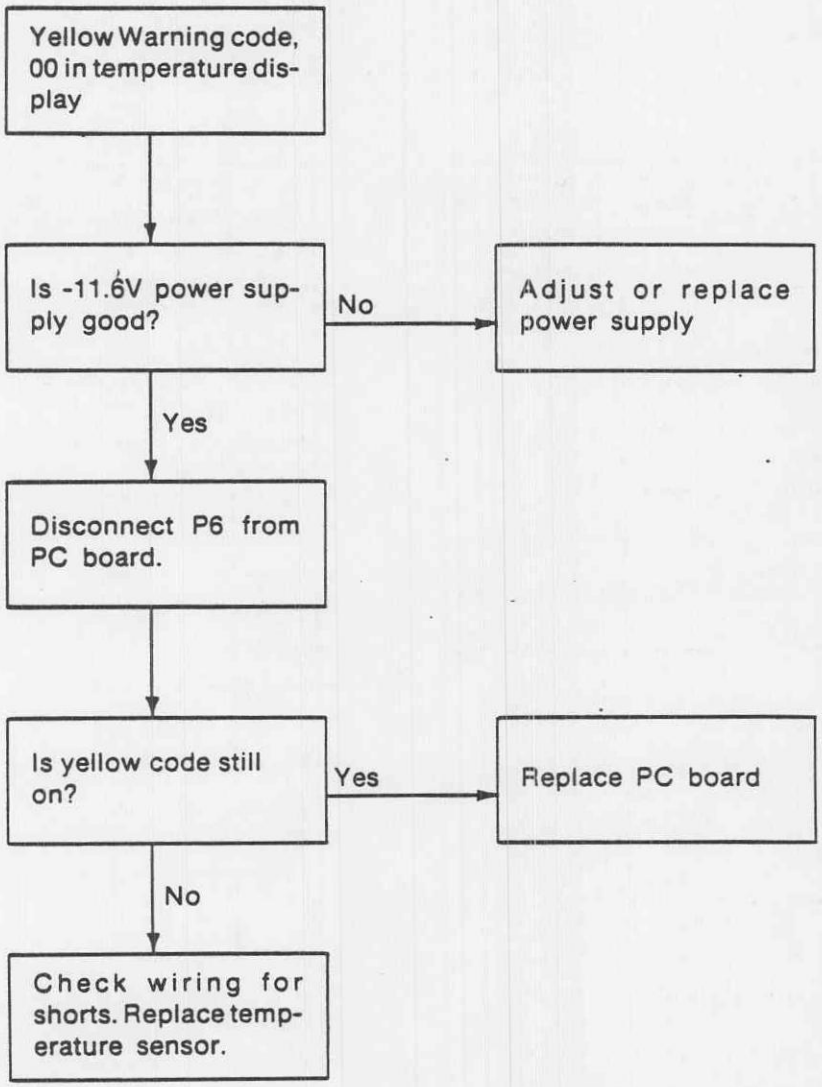
18VAC Power Supply Problem


18 VAC power supply not at 18 VAC ±4 VAC
Voltage less than 18 VAC
Voltage more than 18 VAC
Voltage correct
Check Trouble Analysis "Unit will not turn on"
Voltage power supply good
Check that power supply input is correct
18V good
Still low
Check input voltage to power supply
Input OK
Replace power supply
Input incorrect
Check wiring
Replace power supply

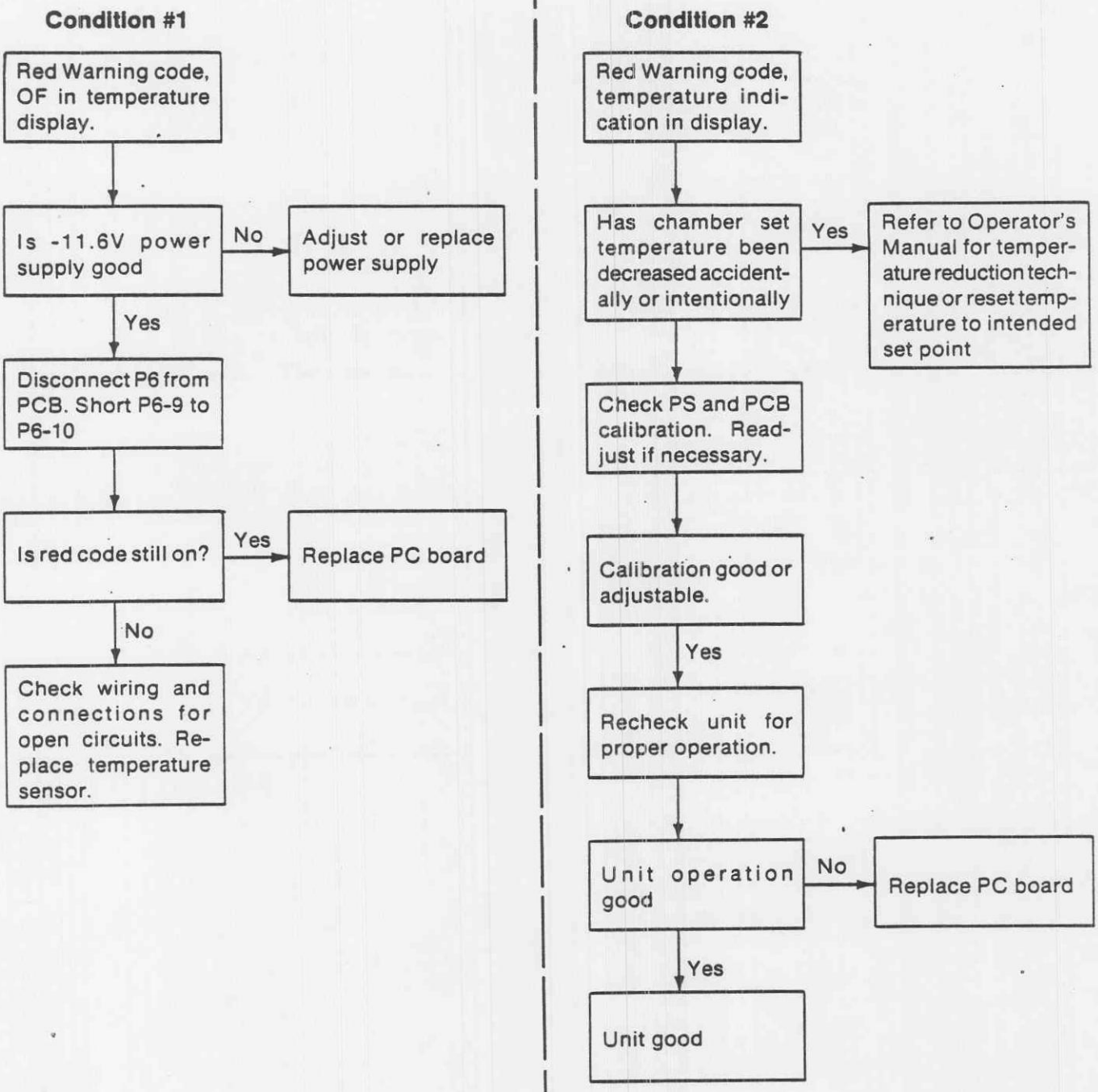
24V Power Supply Problem



Yellow Warning Lit

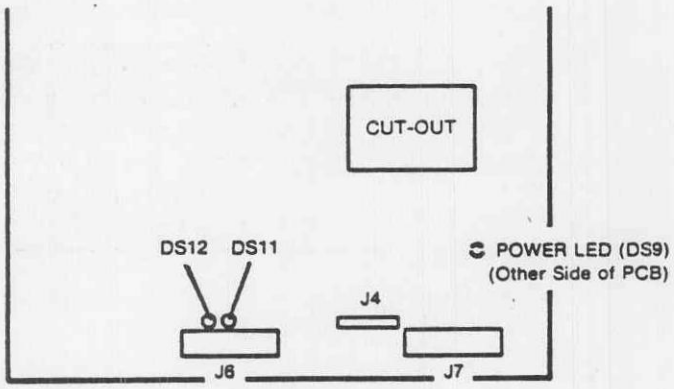


Red Warning Lit


Condition #1
Red Warning code, OF in temperature display.
Is -11.6V power supply good
No
Adjust or replace power supply
Yes
Disconnect P6 from PCB. Short P6-9 to P6-10
Is red code still on?
Yes
Replace PC board
No
Check wiring and connections for open circuits. Replace temperature sensor.
Condition #2
Red Warning code, temperature indication in display.
Has chamber set temperature been decreased accidentally or intentionally
Yes
Refer to Operator's Manual for temperature reduction technique or reset temperature to intended set point
Check PS and PCB calibration. Readjust if necessary.
Calibration good or adjustable.
Yes
Recheck unit for proper operation.
Unit operation good
No
Replace PC board
Yes
Unit good

HEATER/FAN OPERATIONAL CHECKS

1. Check that circuit breaker is "ON", press the controls "ON" switch and close the door.
2. Set at temperature to require heat-up of the chamber.
3. DS11 and DS12 on the display PCB (printed circuit board) should be lit. DS11 indicates the fans are "ON" and DS12 that the heaters are "ON."



COMPONENT LOCATIONS ON PCB

4. Open chamber door. DS11 and DS12 should go out (off).
5. Close chamber door.
6. Check fan electrical supply circuit.
   a. Check voltage between 2A2TB10 and 2A2SSR4 with a DVM (digital voltmeter). Voltage should be 0 VAC with the door open and either 120 or 240 VAC with the door closed.
   b. Place amprobe on 2A1F and 2AF2 of 2SSR4. With the door closed, the amperage should be 0.2A on a 120 VAC electrical supply or 0.1A on a 240 VAC electrical supply.
7. Check heater electrical supply circuit.
   a. Check voltage between 2A2TB10 and 2A1SSR2 with a DVM. Voltage should be 0 VAC with the door open and either 120 or 240 VAC with the door closed.
   b. Place amprobe on 2A4HTR and 2A3HTR or 2A1SSR2. With the door closed, the amperage should be 4.5A on a 120 VAC electrical supply or 2.25A on a 240 VAC electrical supply.

SAFETY DURING ADJUSTMENTS & CALIBRATION

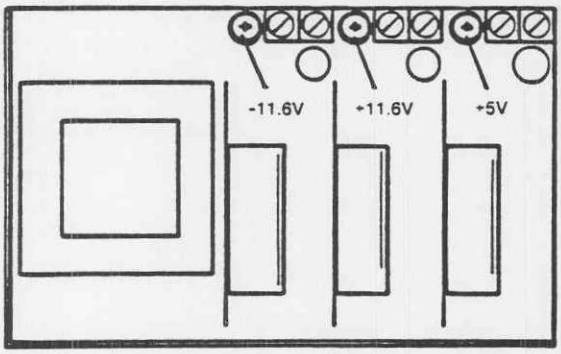
The power circuit must be "ON" to make electrical adjustments and calibrations. Prevent the possibility of electrical shock, which could cause injury, by not making personal contact with the electrical circuit during adjustments and calibration.

TEMPERATURE CONVERSION CHART

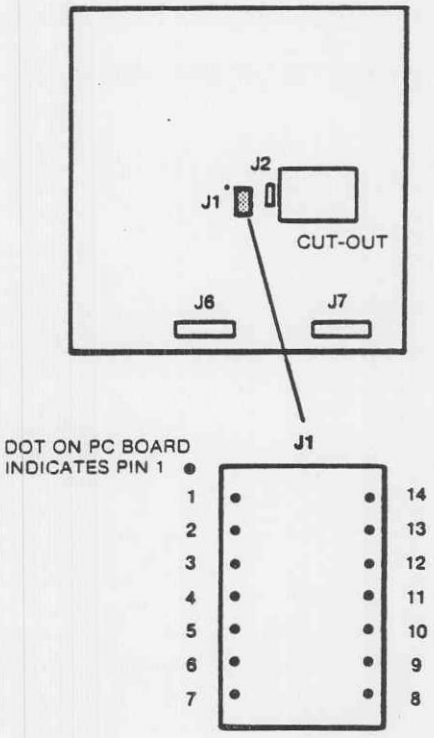
If required, a temperature conversion chart for changing degrees Celsius to degrees Fahrenheit is on Page 2 of this manual.

POWER SUPPLY VOLTAGE CALIBRATION

1. Raise the control head assembly cover.
2. Remove the three screws that secure the power head assembly for access to the power supply components.
3. Check that the circuit breaker has been engaged to "ON." Press the controls "ON" switch on the front panel to "ON" and let the temperature in the Warming Cabinet stabilize for 15 minutes.
4. +5 Volt Adjustment
   a. Place DVM (digital voltmeter) negative probe on J1 - Pin 6 and positive probe on J1 -Pin 7 of the PCB.
   b. Adjust the +5V adjustment POT on the power supply until the reading on the DVM is +5.00 ±0.01 Vdc on the meter.
5. +11.6 Volt Adjustment
   a. Place DVM negative probe on J1 - Pin 6 and the positive probe on J1 - Pin 10 of the PCB.
   b. Adjust the +11.6V adjustment POT on the power supply until the reading is 11.6 ±0.01 Vdc on the meter.
6. -11.6 Volts Calibration
   a. Place DVM negative probe on J1- Pin 6 and the positive probe on J1 - Pin 8 of the PCB.
   b. Adjust the -11.6V POT on the power supply until the DVM reading is -11.6 ±0.01 Vdc.



ADJUSTABLE VOLTAGE POTS

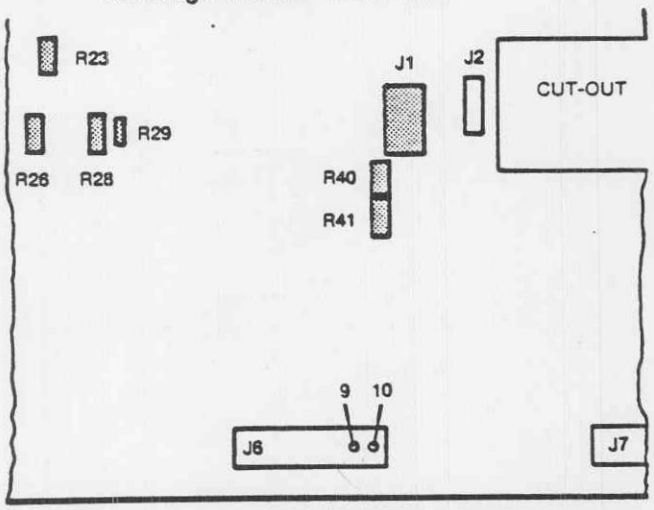


LOCATION OF J1 ON PC BOARD

7. After making the power supply voltage adjustments, check for proper adjustments as follows:
   a. Depress the temperature set point control on the front control panel and the display should read from 36° to 71°C.
8. 18 VAC Voltage Check
   a. Connect DVM probes between J7 - Pin 1 and Pin 2.
   b. DVM reading should be 18.00 +3 -0 VAC.
9. 24 VAC Voltage Check
   a. Connect DVM probes between J7 - Pin 9 and Pin 10.
   b. DVM reading should be 24.00 +6 -0 VAC.

TEMPERATURE CONTROL CALIBRATION

1. Calibrate the power supply voltage as outlined under Power Supply Voltage Calibration before making the Temperature Control Calibration.
2. Adjust 2.5 Vdc on the PCB display.
   a. Connect a DVM (digital voltmeter) negative probe to J1 - Pin 6 and the positive probe to J1 - Pin 2.
   b. Adjust R28 if required to provide a DVM reading of 2.500 +0.005 Vdc.



LOCATION OF COMPONENTS ON PCB

3. Adjust 2.0 Vdc on the PCB display.
   a. Connect a DVM negative probe to J1 - Pin 6 and the positive probe to J1 - Pin 1.
   b. Adjust R26, if required, to provide a DVM reading of 2.000 ±0.005 Vdc.
4. Connect a temporary jumper from J1 - Pin 3 to J1 - Pin 12 to turn on third digit in temperature control display.
5. Connect a jumper from top of R29 to J1 - Pin 6. Adjust R23 so that the display reads 000. Remove jumper between R29 and J1 - Pin 6.

NOTE ▶ *One of two calibration procedures may be used to calibrate the temperature sensor which is a continuation of the Temperature Control Calibration Instructions.*

Procedure I

Procedure I requires an ice/water bath to provide 0°C and a boiling water bath to provide 100°C temperature for immersing the temperature sensor.

1. Remove the temperature sensor from the control box assembly. Remove plug J6 from the PCB and jumper the red wire of TS (temperature sensor) to J6 - Pin 9 and the white wire of TS to J6 -Pin 10.
2. Immerse tip of TS in the ice/water bath. Adjust R41 so that the display reading is the same as the bath temperature. For example, if bath temperature is 0.5°C, adjust display to read 005.
3. Immerse tip of TS in the boiling water bath. Adjust R40 so that the display reading is the same as the bath temperature. For example, if the bath temperature is 100.0°C, adjust display to read 1000.
4. Repeat Steps 2 and 3 three times to assure accurate adjustment.
5. Reassemble the temperature sensor to the control box assembly.
6. Reconnect J6 to the PCB and remove the jumper from J1 - Pin 3 to J1 - Pin 12.

Procedure II

Procedure II requires an adjustable power supply from 0 to 5 Vdc.

1. Disconnect plug J6 from PCB.
2. Connect power supply + to J6 - Pin 9, and to J6 -Pin 10.
3. Adjust power supply to 2.730 Vdc across Pins 9 and 10 of J6. Adjust R41 for display reading of 000.
4. Adjust power supply to 3.730 Vdc across Pins 9 and 10 of J6. Adjust R40 for a display reading of 1000.
5. Repeat Steps 3 and 4 to assure accurate adjustment.
6. Remove power supply, reconnect plug J6 to PCB, and remove the jumper from J1 - Pin 3 to J1 - Pin 12.

DOOR ADJUSTMENT

1. Loosen the two hex head screws on the upper hinge and the lower hinge that secures the hinges to the Warming Cabinet.
2. Place blocking under the door so that it is square and aligned with the front of the Warming Cabinet.
3. Tighten the hex head screws that secure the hinges to the Warming Cabinet.

Recorder Calibration

NOTE

- *This calibration should only be done by qualified service personnel.*
- *Recorder calibration should be done at initial installation, once a year, or when there is a major recorder problem.*
- *Always insure that the power supplies and printed circuit board are in calibration BEFORE attempting recorder calibration.*

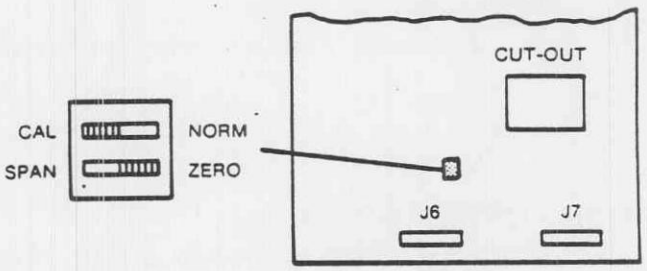
The pen is calibrated for NULL and SPAN. There is no hysterisis or linearity adjustment with this recorder. No calibration should be attempted unless the power has been ON for at least 20 minutes.

Preparation

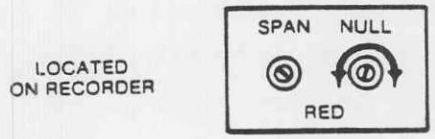
1. Turn lock or key lock located inside the storage compartment at the lower right-hand corner of the back wall.
2. Raise and lock the control head.
3. Install a new chart on the recorder. Fold back the lower right segment to expose the calibration adjustments.

Pen Calibration

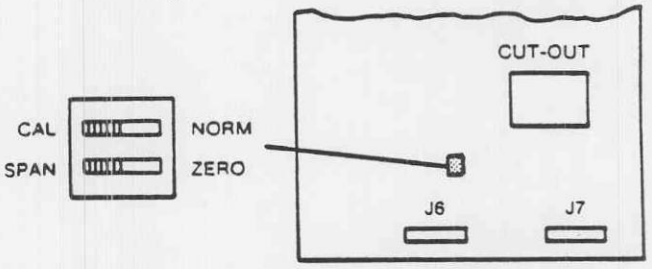
1. Set PEN switches as illustrated.



2. Adjust pen at 0% line.



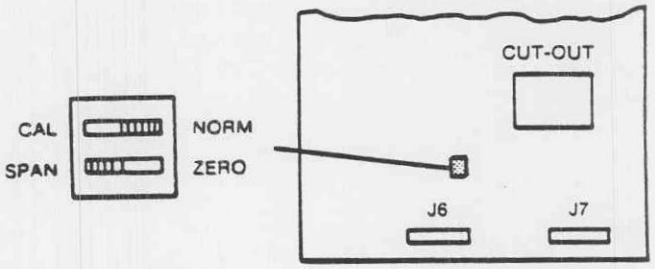
3. Set PEN switch to SPAN.



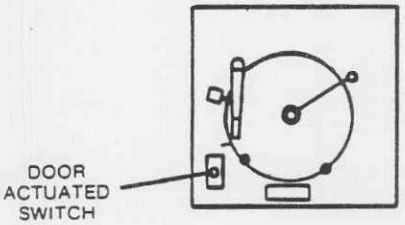
4. Adjust pen to 100% line.

5. Repeat Steps 1 thru 4 several times. Readjust pen as required.
6. Again repeat Steps 1 thru 4 and check for correct position of pen at 0 and 100%. Make last setting at 0%.

7. Set PEN switches for NORMal operation.



8. Manually push the door actuated switch into the middle position.
9. Secure the Warming Cabinet as outlined below.



Secure Warming Cabinet

1. Remove test chart and install a new chart on the recorder.
2. Raise and latch the control head.
3. Raise and secure the control box cover.
4. Lower and lock the control head.

SAFETY DURING REPAIR

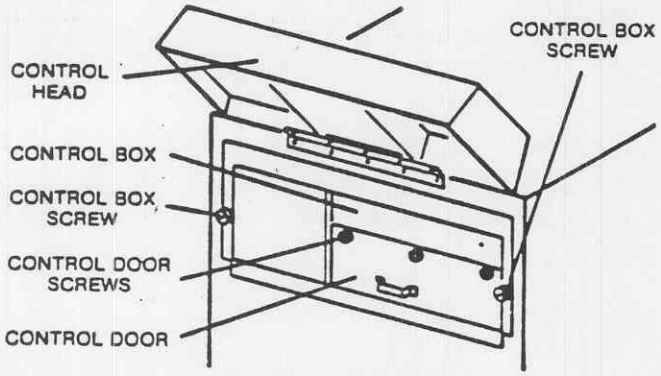
Disconnect the Warming Cabinet electrical supply circuit before making repairs to prevent injury from electrical shock.

ACCESS TO CONTROL HEAD COMPONENTS

1. Open center section door.
2. Turn screw in lower right corner to release the control head.
3. Pull forward on the bottom of the control head which is hinged at the top to raise the control head and secure it in the raised position.

ACCESS TO CONTROL BOX COMPONENTS

1. Raise the control head as outlined under Access to Control Head Components.
2. Remove the three screws at the top of the control door and open the door.



CONTROL HEAD-& BOX

3. Disconnect the two control box electrical cord connectors from the printed circuit board by pulling them from the mating prongs on the board.
4. Remove the two control box securing screws, one on each side.
5. Pull the control box forward on the track until it stops against the locking mechanism stop.

Many components can now be serviced from the front or top of the control box. Instructions continue for removal of the control box from the Warming Cabinet to service the heaters, fans, door switch, low voltage power supply, and thermostat.

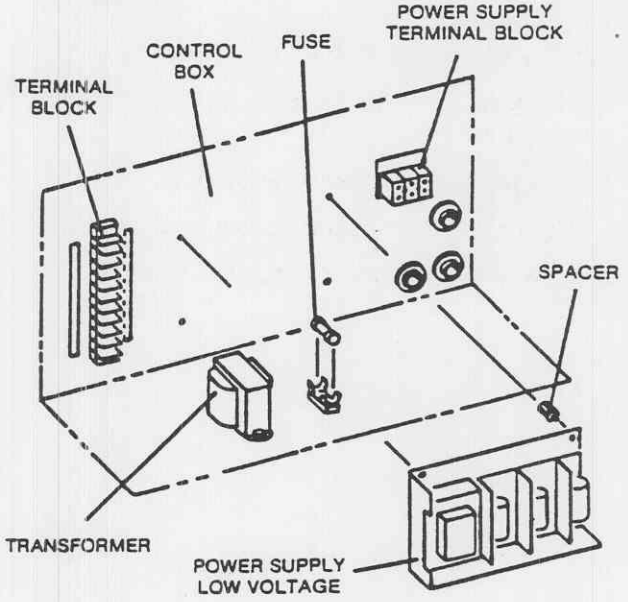
6. Disconnect the blue, brown, and yellow power supply wires from the terminal board on the back wall of the control box. Note the location of each wire for reconnection.
7. Pull electrical supply line cable through the strain relief.
8. Disconnect the door switch cable and pull it down through the hole in the bottom of the control box.
9. Reach inside the control box and pull up on the control box mounting stop to release the control box and at the same time pull it forward from the Warming Cabinet.

CIRCUIT BREAKER REPLACEMENT

1. To replace the circuit breaker, follow instructions as outlined in Steps 1 thru 5 under Access to Control Box Components.
2. Disconnect the wires from the circuit breaker.
3. Press the clips on each side of the circuit breaker, behind the panel, that secure it and remove forward from the panel.

FUSE REPLACEMENT

1. To replace the fuse, follow instructions as outlined in Steps 1 and 2 under Access to Control Box Components for access to the fuse.
2. Reach inside and replace the fuse in the fuse holder.



CONTROL BOX

TRANSFORMER REPLACEMENT

1. To replace the transformer, follow instructions as outlined in Steps 1 thru 5 under Access to Control Box Components for access to the transformer.
2. Disconnect the wires. Note location of wires for reassembly.
3. Replace the transformer which is secured to the bottom of the control box with two bolts, nuts, and washers.

LOW VOLTAGE POWER SUPPLY REPLACEMENT

1. To replace the power supply, remove the control box from the Warming Cabinet as outlined in Steps 1 thru 9 as outlined under Access to Control Box Components.
2. Remove #1 wire from 2A1J and #4 wire from 2A2TB terminal strip.
3. Remove the four screws that secure the power supply. Retain the four spacers between the power supply and panel which must be reassembled with the replacement power supply.
4. After replacing the power supply, calibrate it as outlined under Low Voltage Power Supply Calibration.

FAN REPLACEMENT

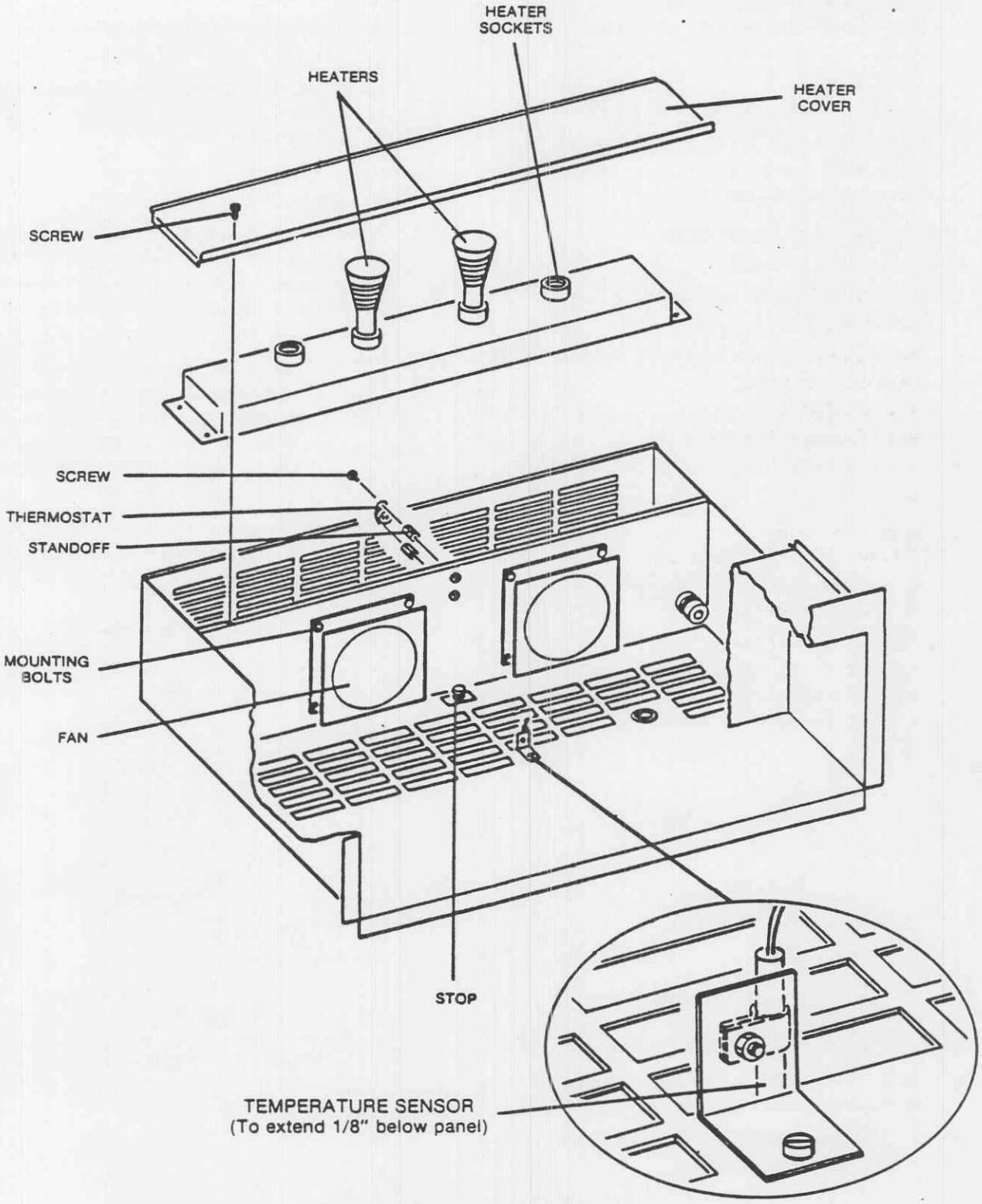
1. To replace the fan, remove the control box from the Warming Cabinet as outlined in Steps 1 thru 9 under Access to Control Box Components.
2. Disconnect the fan wiring.
3. Remove the four bolts, nuts, and washers that secure the fan.

HEATER REPLACEMENT

1. To replace heaters, remove the control box from the Warming Cabinet as outlined in Steps 1 thru 9 under Access to Control Box Components.
2. Remove the heater cover which is secured with three screws.
3. Unscrew the heaters from the heater sockets. Replace in the exact location from which removed.

THERMOSTAT REPLACEMENT

1. To replace the thermostat, remove the control box from the Warming Cabinet as outlined in Steps 1 thru 9 under Access to Control Box Components.
2. Remove wires from the thermostat.
3. Remove the thermostat which is secured to standoffs, with screws.



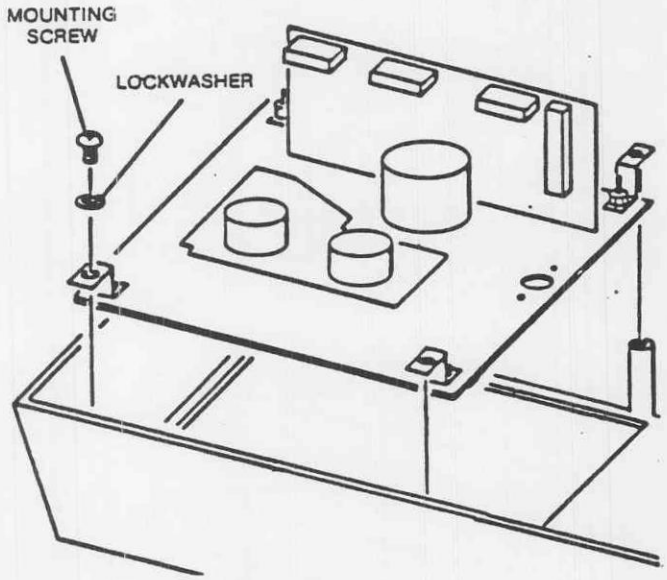
CONTROL BOX COMPONENTS

DOOR SWITCH REPLACEMENT

1. To replace the door switch, remove the control box from the Warming Cabinet as outlined in Steps 1 thru 9 under Access to Control Box Components.
2. Remove wires from the door switch.
3. Press the clips on each side of the switch, behind the panel, that secures it and remove forward from the panel.

RECORDER REPLACEMENT (Optional Equipment)

1. Raise the control head and secure it in the raised position.
2. Remove the 10 pin plug connection from the recorder.
3. Remove the four securing screws and washers that secures the recorder to the control head which releases the recorder for replacement.



RECORDER

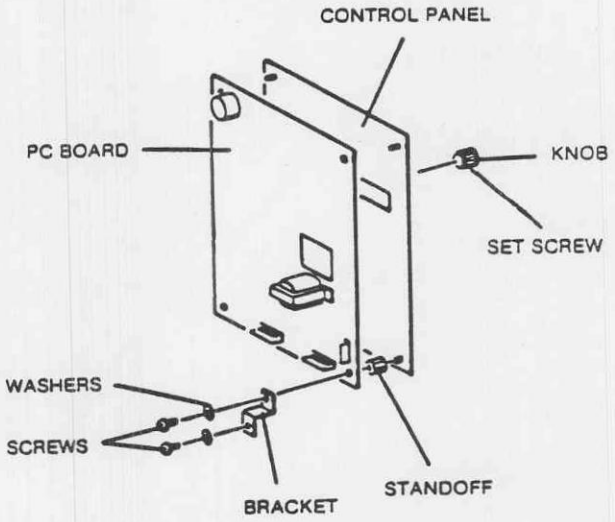
PRINTED CIRCUIT BOARD REPLACEMENT

1. Raise the control head as outlined under Access to Control Head Components.
2. Disconnect all electrical plug connections from the printed circuit board.
3. Remove the four screws and lockwashers on the corners, that secure the assembly to the control head.
4. Separate the printed circuit board from the control panel as follows:
   a. Remove the knob from the front of the panel. It is secured with an Allen set screw.
   b. Remove the six screws that secure the printed circuit board to the control panel and separate them.
5. Reassemble the replacement circuit board to the control panel.
6. Check that the jumpers are connected properly as shown on the illustration of J3 of the PC board under Trouble Analysis, "Jumper Connections on J3 of Printed Circuit Board."

NOTE

When reassembling the knob to the shaft at the front of the panel, be sure to leave a sufficient distance between the knob and the panel so it can be pressed to give a reading of the chamber set temperature.

7. Replace the assembly in the control head and reconnect the electrical connections to the printed circuit board.



PCB BOARD REPLACEMENT

RELAY REPLACEMENTS

A solid state 40 AMP and a 2.5 AMP relay are secured to the backside of the control door with a nut and screw, and a nut respectively.

1. To replace the relays, follow instructions as outlined in Steps 1 and 2 under Access to Control Box Components for access to the relays.
2. Note the exact location of wire connections for reassembly and then remove relay wire connections.
3. Replace the relay.

DOOR GASKET REPLACEMENT

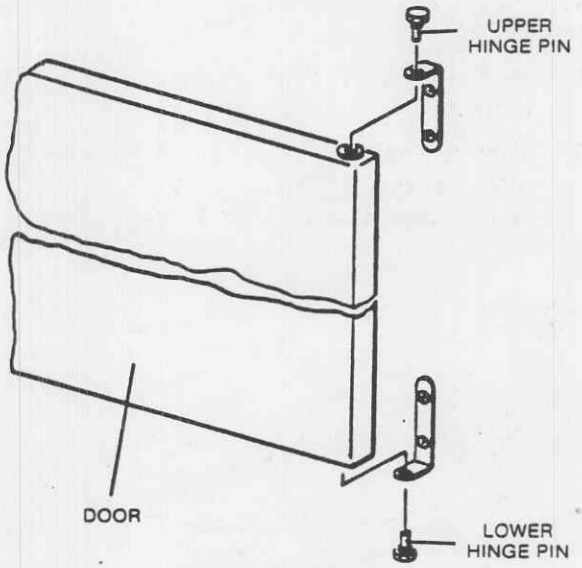
1. Replacement of gasket at outer perimeter of door.
   a. Remove the door plate on the inside of the door, that secures the gasket. Raise the edge of the gasket to expose the screws that secures the door plate and gasket.
   b. Assemble the door gasket to the door plate and then secure both to the door with the screws that were removed.
2. Replacement of gasket between upper and lower compartments on 5520 and 5525 Warming Cabinets.
   a. Remove the strip of metal that secures the gasket. Raise the edge of the gasket to expose the screws that secures both the strip and the gasket.
   b. Assemble the gasket to the strip of metal and then secure both to the door with the screws that were removed.

REVERSING DOOR SWING

If desired, a Warming Cabinet door may be converted from right-hand to left-hand, or left-hand to right-hand, by following the procedure described below.

Models 5520 & 5525

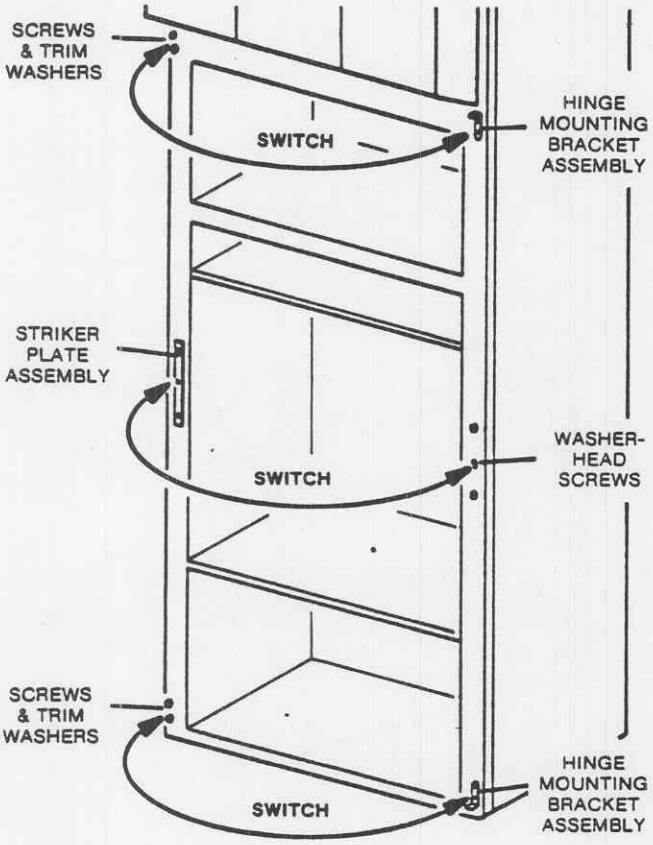
NOTE ▶ *If the unit has an exterior cabinet, the cabinet will have to be disassembled to remove the door hinges.*



DOOR REMOVAL

1. With door held in the closed position, remove the upper and lower hex head hinge pins, in that order. Then remove the door.

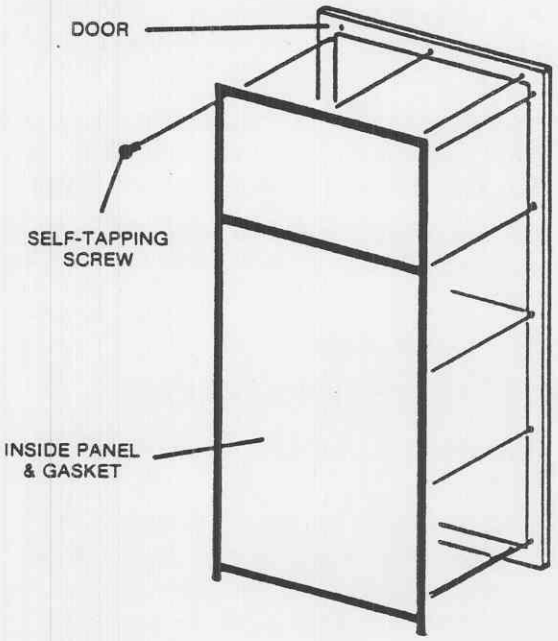
2. Remove the upper and lower hinge mounting bracket assemblies.



DOOR HARDWARE RELOCATION

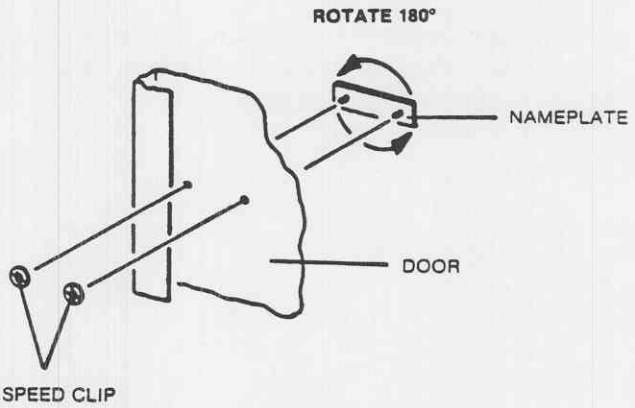
3. Remove the two sets of screws, trim washers, and stiffeners from the opposite side of the Warming Cabinet, and assemble them in the holes where the hinge mounting brackets had previously been assembled. In turn, assemble the hinge mounting brackets to the opposite side of the Warming Cabinet.

4. Remove the door striker plate assembly from its mounting position on the Warming Cabinet side panel. Remove the three washer-head screws from the identical mounting position on the opposite Warming Cabinet side panel. Reassemble the door striker plate assembly to the holes where the three washer-head screws had previously been located, and reassemble the washer-head screws to the position previously occupied by the door striker plate assembly.



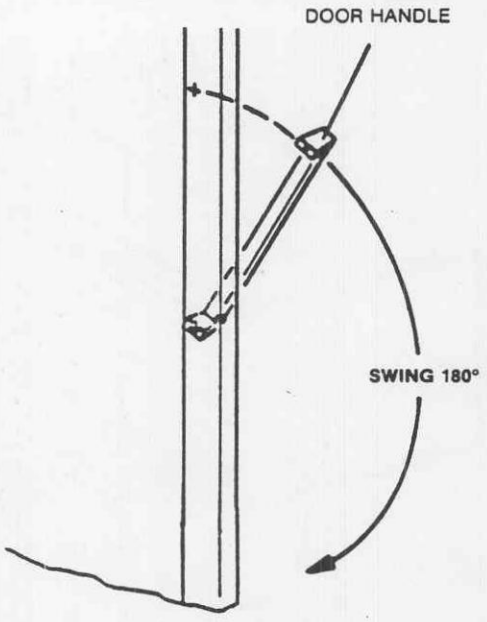
PANEL & GASKET REMOVAL

5. Remove the inside panel and gasket from the Warming Cabinet door. It is secured with forty five #8-32 self-tapping screws.



NAMEPLATE ROTATION

6. Remove the nameplate. It is secured with two speed clips. Rotate the nameplate 180 degrees and reassemble to the same holes.

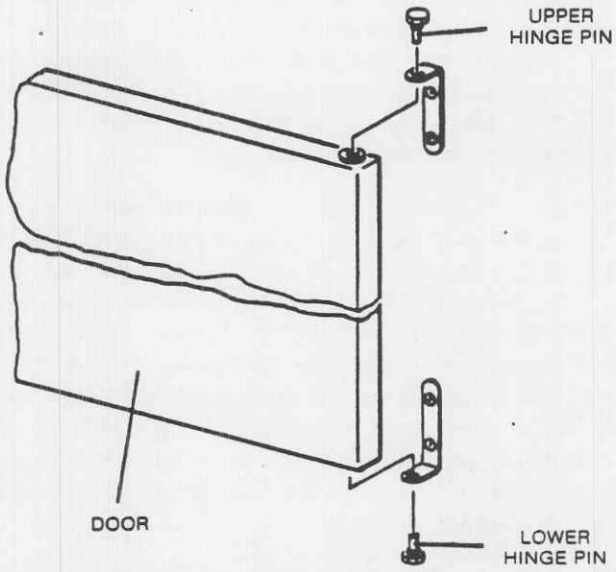


DOOR HANDLE RELOCATION

7. Remove the #10-32 screw and trim washer located in the bottom portion of the door, directly below the door handle. Loosen the #10-24 screw that secures the door handle to the door panel in the vicinity of the door latch. Remove the other #10-24 screw that secures the opposite end of the door handle. Carefully allow the door handle to swing downward and reassemble the unattached end to the hole that had previously held the #10-32 screw and trim washer. Tighten the fastener that secures the other end of the door handle. Assemble the #10-32 screw and trim washer to the hole that had originally secured the door handle.
8. Rotate the door 180 degrees. Reassemble the inside door panel and gasket to the door. Do not rotate the panel and gasket.
9. Reassemble the door to the hinges using the hex head hinge pins. Assemble the lower hinge pin first. Fit door onto the pin and align door with the upper hinge. Assemble upper hinge pin to secure door to Warming Cabinet.

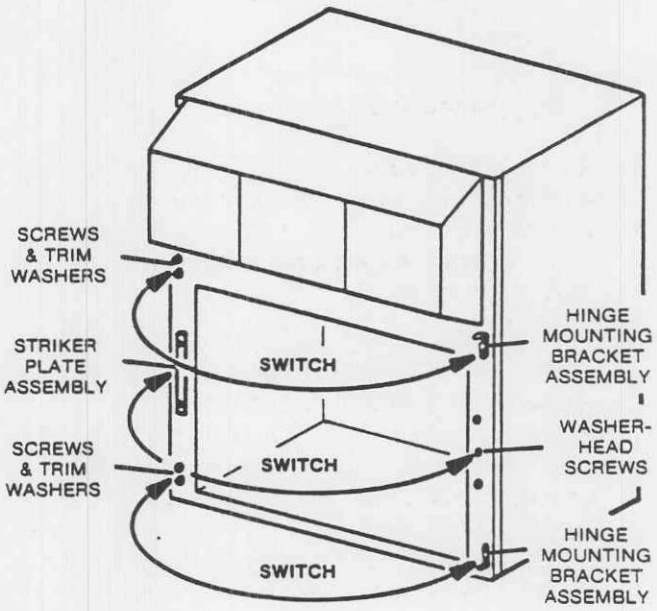
Model 5530

NOTE ▶ *If unit has an exterior cabinet, the cabinet will have to be disassembled to allow the door hinges to be moved.*



DOOR REMOVAL

1. With door held in the closed position, remove the lower and upper hex head hinge pins, in that order. Then remove the door.
2. Remove the upper and lower hinge mounting bracket assemblies.

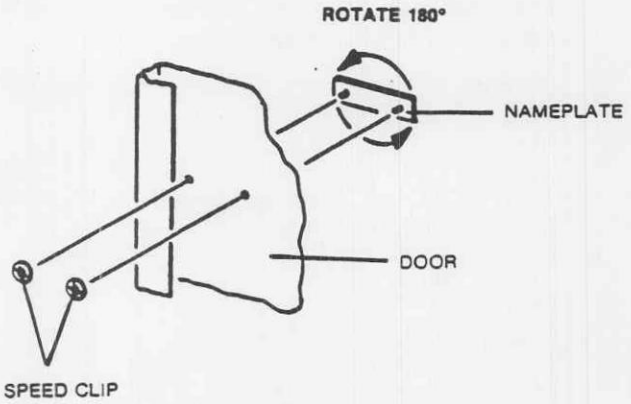


DOOR HARDWARE RELOCATION

3. Remove the two sets of screws, trim washers, and stiffeners from the opposite side of the Warming Cabinet, and assemble them in the holes where the hinge mounting brackets had previously been assembled. In turn, assemble the hinge mounting brackets to the opposite side of the Warming Cabinet.

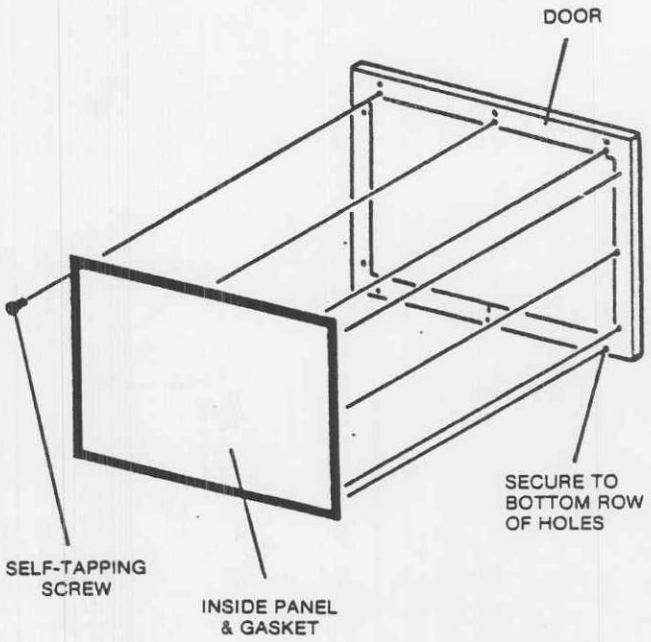
4. Remove the door striker plate assembly from its mounting position on the Warming Cabinet side panel. Remove the three washer-head screws from the identical mounting position on the opposite Warming Cabinet side panel. Reassemble the door striker plate assembly to the holes where the three washer-head screws had previously been located, and reassemble the washer-head screws to the position previously occupied by the door striker plate assembly.

5. Remove the inside panel and gasket from the Warming Cabinet door. It is secured with thirty one #8-32 self-tapping screws.



NAMEPLATE ROTATION

6. Remove the nameplate. It is secured with two speed clips. Rotate the nameplate 180 degrees and reassemble to the same holes.



PANEL & GASKET MOUNTING

7. Rotate the door 180 degrees. Reassemble the inside door panel and gasket to the door. Do not rotate the panel and gasket. Make sure the bottom row of self-tapping fasteners assemble the panel and gasket to the bottom row of holes provided in the door.

8. Reassemble the door to the hinges using the hex head hinge pins. Assemble the lower hinge pin first. Fit door onto the pin and align door with the upper hinge. Assemble upper hinge pin to secure door to Warming Cabinet.